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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,677	07/28/2003	Scott D. Briles	S-100,588	4503
35968 7590 01/26/2011 LOS ALAMOS NATIONAL SECURITY, LLC LOS ALAMOS NATIONAL LABORATORY P.O. BOX 1663, LC/TP, MS A187 LOS ALAMOS, NM 87545				
EXAMINER				
LEE, SIU M				
ART UNIT		PAPER NUMBER		
2611				
MAIL DATE		DELIVERY MODE		
01/26/2011		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/628,677

**Applicant(s)**

BRILES, SCOTT D.

**Examiner**

SIU M. LEE

**Art Unit**

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3, 4 and 6-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-4, 6-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-940)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 6/7/2010 have been fully considered but they are not persuasive.

Applicant's argument:

Regarding claims 1 and 7:

Claims 1 and 7 are amended with an added limitation "switching the phase of a return signal received from a modulated reflectance apparatus between two reflection state"; the modulation proposed in the pending claims switches between to maximum reflective states, 1) an "open" (very high impedance – near infinity) and 2) a "short" (very low impedance – near zero). These two states reflect the phase of the impinging electromagnetic field in two difference ways. An "open" circuit termination will cause a 180 degree phase shift in the reflected signal. A "short" circuit termination will maintain the same phase orientation as the impinging electromagnetic field. This phase changing property is Binary Phase Shift Keying (BPSK), where the phase of the return signals is switching between two anti-polar phases.

Examiner's response:

Regarding claim 1 and 7:

Claim 1 and 7 recite the component "power splitter"; therefore, the examiner interprets claim 1 and 7 are directed to the embodiment of figure 5.

Paragraph 0035 (filed on 7/16/2009) discloses that when 0 or -1 is to be sent, the antenna will be grounded (line 4-5, 13-14). Therefore, the examiner assume when the antenna is grounded, all the received signal will be grounded and no signal will be reflected. When there is no reflected signal, it is unclear how a zero reflected signal (no reflect signal) can have a phase difference with respect to a reflected signal.

2. Applicant's arguments with respect to claims 1, 3-4, 6-8 have been considered but are moot in view of the new ground(s) of rejection because of the amendment.

#### ***Claim Objections***

3. Claims 1, 3, and 7 are objected to because of the following informalities:

Claim 1, line 10 recites "switching the phase of the return signal between two reflection states"; there is a lack of antecedent basis for "the phase" and "the return signal".

Claim 7, line 12 recites "switching the phase of the return signal between two reflection states"; there is a lack of antecedent basis for "the phase" and "the return signal".

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 3, and 7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Independent claims 1 and 7 recite a added limitation "switching the phase of the return signal between two reflection states"; as claim 1 and 7 recite the component "power splitter"; therefore, the examiner interprets claim 1 and 7 are directed to the embodiment of figure 5.

Paragraph 0035 of the instant application (filed on 7/16/2009), lines 4-5 disclose that when 0 or -1 is to be sent, the antenna will be grounded; and lines 13-14 disclose when a 0 or -1 is to be sent, power shunting switch 52a, b connects antenna 35 to contract 34b of modulation control switch 34.

When the antenna is grounded when 0 or -1 is to be transmitted, all the signal received by the antenna will be grounded and no signal will be reflected. When there is no reflected signal (return signal), there will be phase. It is not possible for no reflected signal to have a phase value.

#### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neagley et al. (US 2002/0128052 A1, hereinafter Neagley) in view of NPL (Potentials, IEEE Volume 18, Issue 4, Oct-Nov 1999, pages 29-33).

(1) Regarding claim 1 (claim 1 is rejected without consideration of the newly added limitation "switching the phase of the return signal between two reflection states"):

Neagley discloses a method comprising:

generating a data bit stream (digital input 18 in figure 1, paragraph 0040);

coding said data bit stream to increase its bit rate (provide the digital input signal 18 to voltage controlled squarewave oscillator 16, paragraph 0040);

providing said modified phase modulated reflectance data bit stream to a switch (impedance switch 14 in figure 1) that selectively connects an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground (the impedance switch 14 can generate an impedance for open circuit or a matched load and connected to the antenna ground as shown in figure 1 (paragraph 0041), therefore, when the impedance switch is with an open circuit, the antenna reflect all of the received radio frequency signal (all energy re-radiated) and when the impedance is a matched load connected to the antenna ground (ANT GND), no energy

is re-radiated from the antenna 10 because the received RF signal energy is split between the impedance of the antenna and the matched load, therefore, it provide a power splitting function; as a result, the impedance switch provide the function of selective connects an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground).

Neagley fails to disclose when the antenna has high impedance in the event a "1" is to be sent low impedance in the event a "0" is to be sent.

However, NPL discloses connects an antenna to an infinite impedance in the event a "1" is to be sent (maximum reflection), or connects said antenna to ground in the event a "0" is to be sent (maximum absorption) (page 31, column 3, lines 51-60).

It is desirable to connects an antenna to an infinite impedance in the event a "1" is to be sent, or connects said antenna to ground in the event a "0" is to be sent as taught by the NPL because it will maximize the signal to noise ratio. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the method of the NPL in the system of Ingram to improve the SNR ratio.

(2) Regarding claim 3:

Neagley discloses a single impedance switch, therefore, said at least one power splitter is one power splitter.

(3) Regarding claim 4:

Neagley discloses an apparatus comprising:

a modulated reflectance unit generating a phase-modulated data bit stream at a pre-selected rate (digital input 18 in figure 1 comprises microphone 28, analog to digital converter 30, and speech compression electronics 32, and error control coding 34 as shown in figure 2; as it is an digital signal, it is of a pre-selected rate);

a coder receiving a data bit stream for having a pre-selected rate wherein said code modifies said data bit stream by increasing said pre-selected rate (voltage controlled squarewave oscillator 16 an intermediate frequency that switched sufficiently rapidly for the input-data rate, paragraph 0040); and

a switch (impedance switch 14 in figure 1) receiving said data bit stream (impedance switch 14 receives the output of the voltage controlled squarewave oscillator 16 as shown in figure 1) and connecting an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground (the impedance switch 14 can generate an impedance for open circuit or a matched load and connected to the antenna ground as shown in figure 1 (paragraph 0041), therefore, when the impedance switch is with an open circuit, the antenna reflect all of the received radio frequency signal (all energy re-radiated) and when the impedance is a matched load connected to the antenna ground (ANT GND), no energy is re-radiated from the antenna 10 because the received RF signal energy is split between the impedance of the antenna and the matched load, therefore, it provide a power splitting function; as a result, the impedance switch provide the function of selective connects an antenna to at least one power splitter, wherein the at least one



power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground);

a subcarrier, wherein the subcarrier is created by switching the impedance between two reflective states (as the subcarrier is not specifically defined, the examiner interprets the subcarrier as the reflected radio frequency signal, the reflected radio signal is created by switching the impedance switch to open circuit and no reflected radio signal when impedance switch is switch to matched load connected to the antenna ground).

Neagley fails to disclose the antenna has high impedance in the event a "1" is to be sent low impedance in the event a "0" is to be sent.

However, NPL discloses connects an antenna to an infinite impedance in the event a "1" is to be sent (maximum reflection), or connects said antenna to ground in the event a "0" is to be sent (maximum absorption) (page 31, column 3, lines 51-60).

It is desirable to connects an antenna to an infinite impedance in the event a "1" is to be sent, or connects said antenna to ground in the event a "0" is to be sent as taught by the NPL because it will maximize the signal to noise ratio. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the method of the NPL in the system of Ingram to improve the SNR ratio.

(4) Regarding claim 6:

Neagley further discloses a single impedance switch, therefore, said at least one power splitter is one power splitter.

8. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ingram (US 6,509,836 B1) in view of NPL (Potentials, IEEE Volume 18, Issue 4, Oct-Nov 1999, pages 29-33), Lewinter (US 4,499,594) and Neagley et al. (US 2002/0128052 A1, hereinafter Neagley).

(1) Regarding claim 7 (claim 1 is rejected without consideration of the newly added limitation "switching the phase of the return signal between two reflection states"):

Ingram discloses a method comprising:

generating data bit stream (information wave form 91 in figure 2B);

generating square waves (periodic square wave 90 is being generated as shown in figure 2B);

multiplying said square waves with said data bit stream (the multiplier in figure 2B multiplies the information wave form 91 and square wave 90 to form impedance control signal 89 as shown in figure 2B)

providing said modified coded data bit stream to a switch (switch 110 in figure 2A) that connects an antenna (tag antenna 88 in figure 2A) to an open stage in the event a "1" is to be sent, or connects said antenna to a close stage in the event a "0" is to be sent (open and close stage according to an impedance control signal 89, open is being interpreted as an indefinite impedance and open is being interpreted as short to the ground) (column 1, lines 56-65).

Ingram fails to disclose (a) converting data bit stream to bipolar states of "+1s" and "-1s" before multiplying with the square wave; (b) the antenna has a high

impedance in the event a "1" is to be sent a low impedance in the event a "0" is to be sent; and (c) a switch receiving said multiplication for connecting an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground.

With respect to (a), Lewinter discloses a digital to analog convert that can convert a binary data stream to bipolar states of "+1s" and "-1s" (figure 2, column 2, lines 11-14).

It is desirable to convert a binary data stream to bipolar states of "+1s" and "-1s" because it reduces the potential for error (column 3, lines 9-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Lewinter in the system of Ingram and NPL to improve the accuracy of the system.

With respect to (b) NPL discloses connects an antenna to an infinite impedance in the event a "1" is to be sent (maximum reflection), or connects said antenna to ground in the event a "0" is to be sent (maximum absorption) (page 31, column 3, lines 51-60).

It is desirable to connects an antenna to an infinite impedance in the event a "1" is to be sent, or connects said antenna to ground in the event a "0" is to be sent as taught by the NPL because it will maximize the signal to noise ratio. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the method of the NPL in the system of Ingram to improve the SNR ratio.

With respect to (c), in the same field of endeavor, Neagley discloses an impedance switch 14 that receives signal from voltage controlled squarewave oscillator and generates an impedance for open circuit or a matched load and connected to the antenna ground as shown in figure 1 (paragraph 0041), therefore, when the impedance switch is with an open circuit, the antenna reflect all of the received radio frequency signal (all energy re-radiated) and when the impedance is a matched load connected to the antenna ground (ANT GND), no energy is re-radiated from the antenna 10 because the received RF signal energy is split between the impedance of the antenna and the matched load, therefore, it provide a power splitting function; as a result, the impedance switch provide the function of selective connects an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground.

It is desirable to have a switch receiving said multiplication for connecting an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground because it provide a condition that no energy is re-radiated from the antenna and thus improve the integrity of the transmitted signal and reduce noise. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Neagley in the apparatus of Ingram, NPL and Lewinter to improve the integrity of the transmitted signal and reduce noise.

(2) Regarding claim 8:

Ingram discloses an apparatus comprising:

square wave generation means for outputting square waves (it is inherently that the periodic square wave 90 as shown in figure 2B is generated by a square wave generating means);

means for generating a phase-modulated reflectance data bit stream (the bit information waveform 91, since the information is in bits, therefore, it is either a one or a zero, thus represent a BPSK signal);

multiplication means for multiplying together said square waves and said bipolar (multiplier as shown in figure 2B multiplies the square wave and the information wave from); and

providing said modified coded data bit stream to a switch (switch 110 in figure 2A) that connects an antenna (tag antenna 88 in figure 2A) to an open stage in the event a "1" is to be sent, or connects said antenna to an close stage in the event a "0" is to be sent (open and close stage according to an impedance control signal 89, open is being interpreted as an indefinite impedance and open is being interpreted as short to the ground) (column 1, lines 56-65);

a subcarrier, wherein the subcarrier is created by switching the impedance between two reflective states (as the subcarrier is not specifically defined, the examiner interprets the subcarrier as the reflected modulated carrier signal 95 as discloses in figure 2A, the modulated carrier signal is created by switching the switch 110 with respect to the impedance control signal of two reflective states; open and close state of switch 110).

Ingram fails to disclose (a) the antenna has a high impedance in the event a "1" is to be sent a low impedance in the event a "0" is to be sent; (b) converter means for converting said data bit stream to bipolar states of "+1" and "-1"; (c) a switch receiving said multiplication for connecting an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground.

With respect to (a) NPL discloses connects an antenna to an infinite impedance in the event a "1" is to be sent (maximum reflection), or connects said antenna to ground in the event a "0" is to be sent (maximum absorption) (page 31, column 3, lines 51-60).

It is desirable to connects an antenna to an infinite impedance in the event a "1" is to be sent, or connects said antenna to ground in the event a "0" is to be sent as taught by the NPL because it will maximize the signal to noise ratio. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the method of the NPL in the system of Ingram to improve the SNR ratio.

With respect to (b), Lewinter discloses a digital to analog convert that can convert a binary data stream to bipolar states of "+1s" and "-1s" (figure 2, column 2, lines 11-14).

It is desirable to convert a binary data stream to bipolar states of "+1s" and "-1s" because it reduces the potential for error (column 3, lines 9-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ

the teaching of Lewinter in the system of Ingram and NPL to improve the accuracy of the system.

With respect to (c), in the same field of endeavor, Neagley discloses an impedance switch 14 that receives signal from voltage controlled squarewave oscillator and generates an impedance for open circuit or a matched load and connected to the antenna ground as shown in figure 1 (paragraph 0041), therefore, when the impedance switch is with an open circuit, the antenna reflect all of the received radio frequency signal (all energy re-radiated) and when the impedance is a matched load connected to the antenna ground (ANT GND), no energy is re-radiated from the antenna 10 because the received RF signal energy is split between the impedance of the antenna and the matched load, therefore, it provide a power splitting function; as a result, the impedance switch provide the function of selective connects an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground.

It is desirable to have a switch receiving said multiplication for connecting an antenna to at least one power splitter, wherein the at least one power splitter selectively connects at least one matched load to the antenna, and wherein the matched load is also connected to the ground because it provide a condition that no energy is re-radiated from the antenna and thus improve the integrity of the transmitted signal and reduce noise. Therefore, it would have been obvious to one of ordinary skill in the art at

the time of invention to employ the teaching of Neagley in the apparatus of Ingram, NPL and Lewinter to improve the integrity of the transmitted signal and reduce noise.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Farr et al. (US 7,046,957 B1) discloses generating reflected and amplified signal switches by substantially 180 degree.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SIU M. LEE whose telephone number is (571)270-1083. The examiner can normally be reached on Mon-Fri, 7:30-4:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Siu M Lee/  
Examiner, Art Unit 2611  
1/21/2011